

Docket No. 032301.090



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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#15  
5/20/03  
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Applicants: GUNTHER MICHAEL, ET AL.

Serial No.: 09/740,039

Examiner: Daniel Metzmaier

Filed: December 20, 2000

Art Unit: 1712

For: HYDROPHOBIC SILICA

REQUEST FOR RECONSIDERATION

MAIL STOP AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Reconsideration is respectfully requested of the Official Action of November 20, 2002, relating to the above-identified application.

A petition for a three month extension of time, together with the associated fee, is filed herewith.

Claims in the case are 1, 2, 4-8, 10 and 11.

Replacement pages for the application page 2 showing the correction of the formula for the Aerosil R 104 and the correction of Table 1 on pages 5 and 6 are presented herewith.

The letters "PA" which appear in Table 1 represents the abbreviation for the German word "Prüfanweisung", which has been translated by applicants as "Text Instructions". The

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail addressed to MAIL STOP AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 13, 2003.

Susan J. Revell

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symbol "UT" identified the apparatus known as "Ultraturrax", which is the high intensity mixer used for preparation of these dispersions.

The code numbers 0955 and 0965 which appear in Example 2 on page 7 are identified on page 9 as the "Ultraturrax mixer" (0965) and the "high speed mixer" (0955).

The rejection of Claims 1, 2, 5-8, 10 and 11 as allegedly anticipated under 35 U.S.C. § 102(b), in view of *Klinge, et al.* is traversed and reconsideration is respectfully requested.

The application, on pages 1 and 2, has already acknowledged the European equivalent of *Klinge*. The reference discloses Aerosil R 972 which is a product of the assignee of this application, namely, Degussa AG. Applicants have advised that this product is made hydrophobic by treatment with dimethyldichlorosilane. (Identified as dimethyl-didioxsilane on page 3 of the amendment of August 6, 2002.)

The claims in this application specify that the hydrophobic pyrogenically produced silica is made hydrophobic by a reaction with a halogen-free silane. There is no disclosure or teaching in *Klinge* of modifying the silica with a non-halogenated silane. Consequently, *Klinge* fails as an anticipation of the claimed invention.

In view thereof, the rejection under 35 U.S.C. § 102(b) is improper and should be withdrawn.

The rejection of Claims 1, 2, 4, 8, 10 and 11 under 35 U.S.C. § 102(b) as anticipated by *Burger* (US 4,680,173) is traversed and reconsideration is respectfully requested.

*Burger* discloses silicas and aerosil dispersions of the silicas. Hydrophobic silicas are discussed in column 10, beginning at line 33 and a number of typical silica products are



identified at column 10, beginning at line 49. *Burger* fails to suggest non-halogenated hydrophobizing agents. Indeed, as one of the examples of a representative silica, *Burger* mentions Aerosil R-972 of *Degussa*, a substance made with a halogenated silica; see, col. 10, lines 67-68.

Consequently, applicants respectfully submit that the *Burger* patent does not describe the claimed hydrophobic pyrogenically produced silica within the meaning of 35 U.S.C. § 102(b). Therefore, it is submitted that the rejection is improper and should be withdrawn.

The rejection of Claims 1, 2, 4, 5, 8, 10 and 11, under 35 U.S.C. § 102(b) as anticipated by *Degussa AG* (EP 0808880 A2) is traversed and reconsideration is respectfully requested. The *Degussa* patent corresponds to U.S. Patent 5,959,005 which describes silica produced by first spraying the silica with water and then surface modifying the reagent, then mixing, tempering and subsequently, destructuring by compressing and grinding. The silicas of the present invention are not destructured by any mechanical action and, therefore, distinguish from the silica shown in the reference.

The rejection of Claims 6 and 7 under 35 U.S.C. § 103(a) as unpatentable over the *Degussa* European patent, and further in view of the *Klingel* patent, is traversed and reconsideration is respectfully requested.

Claims 6 and 7 are directed to producing the claimed silica by compacting using a roller compactor and a belt filter press, respectively. These claims require that the pyrogenically produced silica be hydrophobized with a halogen free silane. The *Klingel* patent relates to a halogenated silane used for this treatment and, therefore, does not suggest the use of a non-



halogenated product to produce the hydrophobic silica.

The *Degussa* patent teaches the use of mechanical action, such as a ball mill, followed by grinding in an air jet mill or a pinned disc mill. See *Hartmann*, column 1, lines 35-39.

No disclosure is found in the cited reference of using a roller compactor or a belt filter press. As is well known in the art, substitution of different compacting means is not something that can be carried out with the expectation of obtaining comparable results. Consequently, applicants respectfully submit that there is insufficient basis to allege that a person skilled in the art would be lead to substitute a roller compactor or a belt filter press for the mechanical action described in the *Degussa* patent. Accordingly, it is respectfully submitted that the rejection is not properly founded on the prior art teachings and, therefore, should be withdrawn. No motivation exists for a person skilled in the art to make the substitution proposed in the Official Action. The rejection fails to establish *prima facie* obviousness.

To establish a *prima facie* obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure, *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).



In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916837 F2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

A statement that the modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ 2d, 1300 (Bd. Pat. App. & Int. 1993).




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For the reasons set forth above, applicants request favorable consideration at the Examiner's earliest convenience.

Respectfully submitted,

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LIT/810327.1



Compaction can be performed by means of a roller compactor. Compaction can preferably be performed by means of a belt filter press according to EP 0 280 851 B1, which reference is relied on and incorporated by reference.

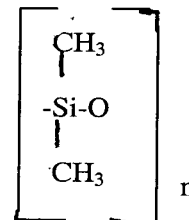
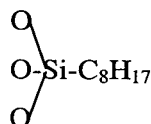
The hydrophobic, pyrogenically produced silica used for purposes of the present invention can be, for example, the silicas known as:

Aerosil R 812 or Aerosil R 812S, having the group  $-O-Si(CH_3)_3$

Aerosil R 202, Aerosil MS 202, Aerosil MS 202, Aerosil R 106

or Aerosil R 104 having the group

Aerosil R 805 having the group



These are commercially available products from Degussa Hüls AG.

The hydrophobic, pyrogenic silica according to the invention having a tamped density of 55 to 200 g/l exhibits the following advantages:

Transport costs are distinctly lower as a result of the higher tamped density.

Once dispersed, the silica according to the invention is in the form of relatively small aggregates. In other words, the dispersions are more finely divided because the silica according to the invention is more readily dispersible.

The dispersions produced using the silica according to the invention exhibit a lower Grindometer value.

Both UV transmission transparency and visual transparency of the dispersions are distinctly improved by using the silica according to the invention.

Dispersions containing the silicas according to the invention exhibit distinctly increased stability because the tendency towards settling is distinctly lower.

Another advantage of the silica according to the invention is reduced dusting during incorporation and the distinctly reduced incorporation or wetting time in, for example, liquid systems.



TABLE (continued)

PA*	Test method	444712	444713	444714	444715	44716	444717	444718	444719	444720	444721	444722	444723
		AER 812 VV90	AER 812S bulk	AER 812S CF	AER 812S VV60	AER 812S VV90	US 202 bulk	US 202 CF	US 202 VV60	US 204 bulk	US 204 CF	US 204 VV60	US 204 VV90
0330	Viscosity, epoxy before cure						350.4	377.6	80.8	379.2	350.4	358.4	368
0335	Viscosity, epoxy after cure						50.7	45.9	45.3	49.9	47	52.6	50.7
0340	Thickening action	11.1	17.3	17.3	18.2	7							
0410	Grindometer value	77	93	110	110	100							
0420	Metanol wearability												
0701	Tamped density	73	49	50	58	75	39	50	67	44	45	57	71
0920	Agglomerate strength	22				8		10	5			16	23
0930	Hard[sec] sieve oversize	12	0	0	0		0	27	6	0	0	3	20
0955	Effectiveness	159	168	169	187	09	320	304	20	186	193	192	201
0965	Effectiveness (UT)**	225	201	200	216	35	336	327	346	223	225	225	230
0975	Setting (effectiveness)**	5	8	8	3		15	10	3	10	10	10	10

\* test instructions

\*\* Ultratrac



TABLE 1

PA*	44701	44702	44703	44704	44705	44706	44707	44708	44709	44710	44711	
Test method	AER 202	AER 202	AER 202	AER 202	AER 805	AER 805	AER 805	AER 805	AER 812	AER 812	AER 812	
	CF	CF	VV60	VV90	bulk	CF	VV60	VV90	bulk	CF	VV60	
0330 Viscosity, epoxy before cure	459	456	382	430	190	184	185	178				
0335 Viscosity, epoxy after cure	54.4	54.7	49.4	52.8	42	41.7	39	43				
0340 Thickening action									11.7	13.3	11.5	
0410 Grindometer value									127	102	92	
0420 Mettler wetability												
0701 Tamped density	45	50	51	75	44	62	55	68	45	44	50	
0920 Agglomerate strength		11	20	18		15	15	20				
0930 Hard[sc] sieve oversize	0	24	4	27	0	36	7	19	0	0		
0955 Effectiveness	258	274	203	266	235	260	236	258	166	185	169	
0965 Effectiveness (UT)**	280	290	226	295	271	284	270	288	197	213	209	
0975 Settling (effectiveness)**	15	15	15	8	10	15	10	5	13	15	8	

\* test instructions

\*\* Ultratunax



## AEROSIL® R 972

### Hydrophobic fumed Silica

**AEROSIL® R 972 is a hydrophobic fumed silica after treated with DDS (Dimethyldichlorosilane) based on a hydrophilic fumed silica with a specific surface area of 130 m<sup>2</sup>/g.**

#### Applications and Properties

##### Applications

- Silicone rubber and Silicone sealants
- Paints and Coatings
- Printing inks and Toner
- Adhesives
- Cable compounds and Gels
- Plant protection

##### Properties

- Hydrophobic component for thickening and reinforcement of RTV-1 K silicone sealants.
- Improves shelf-life of silicone sealants.
- Water resistant, hydrophobising of liquid systems.
- Rheology control of (complex) liquid systems.
- For use in coatings as anti-settling agent, for pigment stabilization and improvement of corrosion protection.
- Improves hydrophobicity and rheology of offset printing inks.
- Improvement and maintenance of free flow and anti-caking characteristics of powders.

Physico-chemical Data		
Properties	Unit	Typical Value
<u>Specific Surface (BET)</u>	m <sup>2</sup> /g	110 ± 20
<u>Carbon content</u>	%	0.6 - 1.2
<u>Average primary particle size</u>	nm	16
<u>Tapped density (approximate value)* acc. to DIN ISO 787/XI, Aug. 1983</u>	g/l	ca. 50
<u>Loss on drying * 2 hours at 105°C</u>	%	? 0.5
<u>Ignition loss 2 hours at 1000°C based on material dried for 2 hours at 105°C</u>	%	? 2.0
<u>pH in 4% dispersion</u>		3.6 - 4.4 3.7 - 5.5 USA
<u>SiO<sub>2</sub>-content (1) (1) based on ignited material</u>	%	> 99.8

\* ex plant

The data represents typical values and not production parameters



**Safety and Handling**


With each (sample-) delivery of our products we will send a **Material Safety Data Sheet**. At any time you can also ask for an MSDS or any other information regarding product safety.

**Packaging and Storage**

AEROSIL® R 972 is supplied in multiple layer 10 kg bags. We recommend to store the product in closed containers under dry conditions and to protect the material from volatile substances.

AEROSIL® R 972 should be used within 2 years after production.

Registration	
CAS-No.	68 611-44-9 60 842-32-2
EINECS	271-893-4
TSCA (USA), AICS (Australia), CEPA (Canada)	Registered
MITI (Japan)	1-548 7-476
ECL (Korea)	KE-10116
NEPA (China)	List III Applied for List I

 If you like to order a sample of this product [click here](#).

**For further information please refer to our contacts on the [world map](#) or:**


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